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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,651	12/20/2001	Shin Eguchi	2500.66065	1164

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EXAMINER

DAVIS, DAVID DONALD

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/027,651

Applicant(s)

EGUCHI ET AL.

Examiner

David D. Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 10, 2005 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawato et al (JP 11-175925) in view of Fontana, Jr. et al (US 5,729,410). Kawato et al shows in

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figure 3 a current-perpendicular-to-the-plane (CPP) or tunnel junction structure (TMJ) magnetoresistive element. The CPP or TMJ includes a lower portion of a magnetoresistive film extending over a surface of a lower electrode layer 21 by a first width in a lateral direction. An upper portion of the magnetoresistive film extends over a surface of the lower portion by a second width smaller than the first width in the lateral direction. Insulators 27 sandwich the upper portion of the magnetoresistive film in the lateral direction so as to establish a narrow path for electric current between the lower portion of the magnetoresistive film and the upper electrode layer. Figure 3 also shows an upper electrode layer 29 contacting the upper portion of the magnetoresistive film. Kawato et al shows in figure 3 the upper portion of the magnetoresistive film includes a free magnetic layer 30.

Kawato et al, however, is silent as to domain control magnetic layers sandwiching the upper portion of the magnetoresistive film. Kawato et al is silent as to the insulator being a magnetic.

Fontana, Jr. et al shows in figure 4a, for example, domain control magnetic layers 150 sandwiching the upper portion of the magnetoresistive film.

Official Notice is taken of the fact that insulators made of an alloy  $\text{Co-}\gamma\text{Fe}_2\text{O}_3$  are notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide domain control magnetic layers sandwiching the upper portion of the magnetoresistive film of Kawato et al as taught by Fontana, Jr. et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been

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motivated to provide domain control magnetic layers sandwiching the upper portion of the magnetoresistive film so as to bias the sense current in the preferred direction.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic head of Kawato et al as modified by Fontana, Jr. et al with an insulator made of an alloy  $\text{Co-}\gamma\text{Fe}_2\text{O}_3$  as taught in the art. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic head with an insulator made of an alloy  $\text{Co-}\gamma\text{Fe}_2\text{O}_3$  so as to establish a magnetization with a more reliable single domain property.

#### ***Response to Arguments***

4. Applicant's arguments filed January 10, 2005 have been fully considered but they are not persuasive. Applicant asserts in the paragraph bridging pages 4 and 5 the following:

These permanent magnetic films 28 exhibit conductivity. Accordingly, the actual width of the upper part of the free ferromagnetic layer includes not only the film 30, but the conductive films 28 also.

Whether or not films 28 exhibit conductivity is not germane to the claimed invention because it is neither precluded nor set forth in the pending claims.

Applicant also asserts in the second full paragraph on page 5 the following:

“Kawato and Fontana, Jr. et al. fail to disclose a structure that defines a narrower path for electric current . . . “ Kawato et al has a free layer, electrodes, and insulators not unlike applicant's claimed and disclosed invention. Therefore, it is curious that applicant asserts that Kawato et al does not disclose a structure that defines a narrower path for electric current.

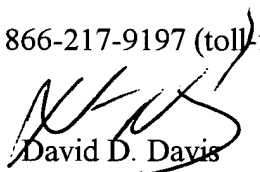
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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Monday thru Friday between 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David D. Davis  
Primary Examiner  
Art Unit 2652

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